

CURRICULUM VITAE

THOMAS WICHMANN

PERSONAL

Birth: February 27, 1960
Münster, Federal Republic of Germany

Citizenship: German; permanent residency in the US.

Marital Status: Married, two children

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EDUCATION

Jugenddorf-Christophorus-Schule Versmold. Abitur with concentrations in mathematics and biology, 1978.

Westfälische Wilhelms-Universität Münster (Münster, Germany). Preclinical examination in medicine passed 1980.

Albert-Ludwigs-Universität Freiburg (Freiburg i. Br., Germany). Clinical examinations in medicine passed 1981, 1983 and 1984.

Dr. med. - thesis: "Immunohistological demonstration of α -fetoprotein and α -choriogonadotropine in human testicular tumors" (Dr. Sabine v. Kleist, Advisor), 1982.

HONORS

Studienstiftung des Deutschen Volkes (German Scholarship Foundation) scholarship 1981 - 1984.

Hoffman-LaRoche Stiftung travel award supporting laboratory stay at the Institute for Cell Research, Lund University, Lund, Sweden (Dr. Anders Bjørklund, supervisor).

WORK EXPERIENCE

Physiology tutor for medical students, University of Freiburg, 1981 - 1983.

Research assistant, Institute of Pharmacology, University of Freiburg, 1981 - 1983.

Medical clerkships included the standard clerkship program in Germany, 1981 - 1984

Resident, Department of Internal Medicine VI, Division of Endocrinology, Heidelberg University Hospital, Heidelberg, Germany. 12/1984 - 3/1986.

Short-time resident, Leprosy Relief Rural Centre, Chettipatty, South India (Dr. Elisabeth Vomstein, supervisor), 3/1986 - 4/1986.

Post-doctoral research fellow, Institute of Pharmacology, University of Freiburg, (Dr. Klaus Starke, supervisor), 6/1986 - 2/1989

Post-doctoral research fellow, Department of Neurology, Johns Hopkins Hospital, Baltimore, MD, (Mahlon DeLong, M.D., supervisor), 3/1989 - 11/1990.

Assistant professor, Department of Neurology, Emory University, Atlanta, GA, 12/1990 - 5/1992

Intern (PGY-I), Dept. of Medicine, Emory University, Atlanta, GA, 7/1992 - 6/1993.

Resident (PGY-II - PGY-IV), Dept. of Neurology, Emory University, Atlanta, GA, 7/1993 - 6/1996.

Chief Resident, Dept. of Neurology, Emory University, Atlanta, GA, 7/1995-6/1996.

Assistant professor, Department of Neurology, Emory University, Atlanta, GA, 7/1996 -8/2001

Associate professor, Department of Neurology, Emory University, Atlanta, GA, 9/2001 - present

Member of the graduate faculty in the Division of Biological and Biomedical Sciences (Neuroscience program), Emory University, Atlanta, GA, 12/1998 - present.

Member of the graduate faculty in the Division of Biological and Biomedical Sciences (Molecular and Systems Pharmacology), Emory University, Atlanta, GA, 3/2003 - present

LICENSURES/BOARD CERTIFICATION

Georgia Medical License (GA34755)
American Board of Psychiatry and Neurology, 5/1997

SOCIETY MEMBERSHIPS

American Academy of Neurology
International Basal Ganglia Society
Society for Neuroscience

GRANT SUPPORT

Grant by the Parkinson's Disease Foundation, AEffects of Inactivation of the Substantia Nigra Pars Reticulata in parkinsonian Primates@, 1/1/1997-9/30/1998

NIH grant (R01NS34872), "The substantia nigra pars reticulata in movement and movement disorders", 4/97 - 4/2003

Project 4 in NIH grant for Parkinson's Disease Center of Excellence Grant, APathophysiology of the basal ganglia in parkinsonism@, 12/1/1998 - 11/30/2003

Grant by the Israel/US Binational Science Foundation (Bergman, Wichmann), APhysiology and Pharmacology of the Basal Ganglia Reward Systems@, 10/1/1999-9/30/2002

NIH grant (R01NS40432), AInfluence of subthalamic nucleus on striatal dopamine@, 4/2001 - 3/2005

NIH grant (R01NS42250), ABasal ganglia discharge patterns in parkinsonism@, 6/2001 - 5/2006

NIH grant (R01NS42937), AGABA-B Receptors and Parkinson's Disease@ (PI: Y. Smith, Ph.D), 7/1/2002 - 06/30/06

AD-HOC REVIEWS

Journal reviews:

Annals of Neurology, Archives of Neurology, European Journal of Neuroscience, Experimental Neurology, Journal of Neurophysiology, Journal of Neuroscience, Journal of Neuroscience Methods, Nature, Neurology, Neuropsychopharmacology, Neuroscience, Neuroscience Letters, Physiology & Behavior, Science, The Neurologist, Trends in Neuroscience

Grant review:

NIH/NINDS study sections IFCN-5 (temporary member 2002, regular member since 2003) and ZRG1 F02B (temporary member 2002, regular member since 2003)

Michael J. Fox Foundation Community Fast Track Reviews 2003, 2004

ACTIVITIES AND INTERESTS

Languages: German, English, Latin.

Interests: Music, astronomy, philosophy, literature

LECTURESHIPS, SEMINAR INVITATIONS AND VISITING PROFESSORSHIPS

Invited lecture on the role of the subthalamic nucleus in parkinsonism, SFB Neuroscience, University of Freiburg, Germany, 10/1997

Invited lecture on parkinsonian pathophysiology, Novartis, Basel, Switzerland, 10/1997

Invited lecture on parkinsonian pathophysiology, Div. Neurology, Matsumoto University, Matsumoto, Japan, 3/2000

Visiting scientist, Tokyo Metropolitan Organization for Medical Research, 3/2000, funded by Japanese Society for the Promotion of Science. A seminar on the role of the substantia nigra pars reticulata in parkinsonism was given during this stay.

Visiting scientist, Tokyo Metropolitan Organization for Medical Research, 3/2002, funded by Japanese Society for the Promotion of Science. A seminar on the role of the subthalamic nucleus in parkinsonism was given during this stay.

Invited Lecture on the role of the subthalamic nucleus in movement disorders, VA Hospital, Portland, OR, 5/2002

Invited Grand Rounds presentation, Dept. Neurology, University of Colorado, Denver, CO, on the role of the subthalamic nucleus and substantia nigra pars reticulata in Parkinsonism, 10/29/2003

Invited lecture, Oregon Health Sciences University, Portland, OR, the role of the subthalamic nucleus and substantia nigra pars reticulata in Parkinsonism, 11/18/2003

Invited Grand Rounds presentation, Dept. Neurology, Cleveland Clinic, Cleveland, OH, on the role of the subthalamic nucleus and substantia nigra pars reticulata in Parkinsonism, 12/08/2003

Invited lecture, Udall Center Workshop on Basal Ganglia physiology and pathophysiology, on subthalamic neuronal discharge patterns in Parkinson's disease, 4/19/2004

Winter Brain Conference 1/2000 - symposium on oscillatory activity in the basal ganglia.

Invited lecture on the physiology and anatomy of the subthalamic nucleus, Symposium on Brain stimulation and Epilepsy, Cleveland Clinic, Cleveland, OH, 5/2002

PUBLICATIONS

Peer-reviewed Publications:

Wittekind Chr, Wichmann T, v. Kleist S (1982) Alpha-Fetoprotein in Hodentumoren. Immunohistochemischer Nachweis in einheitlich klassifizierten Tumoren. Pathologe 3:175.

Zelis R, Wichmann T, Starke K (1982) Inhibition of vascular noradrenaline release by diltiazem. Circulation 66: II-139.

Starke K, Spaeth L, Wichmann T (1984) Effects of verapamil, diltiazem and ryosidine on the release of dopamine and acetylcholine in rabbit caudate nucleus slices. Naunyn-Schmiedeberg's Arch Pharmacol 325: 124-130.

Zelis R, Wichmann T, Starke K (1985) Inhibition by diltiazem of norepinephrine release from sympathetic nerves in the rabbit pulmonary artery. Pharmacology 31: 268-277.

Wichmann T, Illing R, Starke K (1987) Acetylcholine (ACh) in rabbit superior colliculus (SC): Uptake, release and modulation of release. Naunyn-Schmiedeberg's Arch Pharmacol 335 (Suppl): R78.

Wichmann T, Illing R-B, Starke K (1987) Evidence for a neurotransmitter function of acetylcholine in rabbit superior colliculus. *Neuroscience* 23: 991-1000.

Wichmann T (1988) Noradrenaline (NA) in rabbit superior colliculus: Content, uptake, release, and modulation of release. *Naunyn-Schmiedeberg's Arch Pharmacol* 337 (Suppl): R97.

Wichmann T, Starke K (1988) Uptake, release and modulation of release of noradrenaline in rabbit superior colliculus. *Neuroscience* 26:621-634.

Wedzony K, Limberger N, Spaeth L, Wichmann T, Starke K (1988) Acetylcholine release in rat nucleus accumbens is regulated through dopamine D₂-receptors. *Naunyn-Schmiedeberg's Arch Pharmacol* 338:250-255.

Zelis R, Brunner H, Zelis K, Wichmann T (1988) Vascular sympathetic nerve function in congestive heart failure. *Am J. Cardiol.* 62:63E-67E.

Wichmann T, Wictorin K, Bjørklund A, Starke K (1988) Release of acetylcholine and its dopaminergic control in slices from striatal grafts in the ibotenic acid lesioned rat striatum. *Naunyn-Schmiedeberg's Arch Pharmacol* 338:623-631.

Limberger N, Fischer M.R.G., Wichmann T, Starke K (1989) Phentolamine blocks presynaptic serotonin autoreceptors in rabbit and rat brain cortex. *Naunyn-Schmiedeberg's Arch Pharmacol.* 340:52-61.

Wichmann T, Limberger N, Starke K (1989) Release and modulation of release of serotonin in rabbit superior colliculus. *Neurosci.* 32:141-151.

Wichmann T, Starke K (1990) Modulation by muscarine and opioid receptors of acetylcholine release in slices from striato-striatal grafts in the rat. *Brain Res.* 510:296-302.

Wichmann T, Bergman H, DeLong M R (1990) Increased neuronal activity in the subthalamic nucleus (STN) of MPTP treated monkeys. *Movement Disorders, Supplement 1*, 5:78.

Bergman H, Wichmann T, DeLong M R (1990) Amelioration of parkinsonian symptoms by inactivation of the subthalamic nucleus (STN) in MPTP treated monkeys. *Movement Disorders, Supplement 1*, 5:79.

Bergman H, Wichmann T, DeLong MR (1990) Reversal of experimental parkinsonism by lesions of the subthalamic nucleus. *Science*, 249:1436-1438.

Illing RB, Nikolarakis KE, Wichmann T, Spatz WB, Starke K (1990) Release of met-enkephalin and its modulation through acetylcholine receptors in the rabbit superior colliculus. *Exp Brain Res*, 82:663-666, 1990.

Wichmann T, Bergman H, DeLong MR (1994) The primate subthalamic nucleus: I. Functional properties in intact animals. *J Neurophysiol* 72:494-506

Bergman H, Wichmann T, Karmon B, DeLong MR (1994) The primate subthalamic nucleus: II. Neuronal activity in the MPTP model of parkinsonism. *J Neurophysiol* 72:507-520.

- Wichmann T, Bergman H, DeLong MR (1994) The primate subthalamic nucleus: III. Changes in motor behavior and neuronal activity in the internal pallidum induced by subthalamic nucleus inactivation in the MPTP model of parkinsonism. *J Neurophysiol* 72:521-530.
- Smith Y, Wichmann T, DeLong MR (1994) Synaptic innervation of neurones in the internal pallidal segment by the subthalamic nucleus and the external pallidum in monkeys. *J Comp Neurol* 343:297-318.
- Wichmann T, Bergman H, Starr PA, Subramanian T, Watts RL, DeLong MR. (1999) Comparison of MPTP-induced changes in spontaneous neuronal discharge in the internal pallidal segment and in the substantia nigra pars reticulata in primates. *Experimental Brain Research*, 125:397-409, 1999.
- Starr PA, Wichmann T, van Horne C, Bakay RAE (1999) Intranigral transplantation of fetal substantia nigra allograft in the hemiparkinsonian Rhesus monkey. *Cell Transplantation*, 8: 37-45
- Wichmann T (2000) A Digital Averaging Method For Removal of Stimulus Artifacts in Neurophysiologic Experiments. *J Neurosci Methods*, 98:57-62
- Starr PA, Subramanian T, Bakay RAE, Wichmann T (2000) Electrophysiologic localization of the substantia nigra in the parkinsonian primate: Technical Note. *J Neurosurg*, 93:704-710
- Wichmann T, Kliem MA, DeLong MR (2001) Antiparkinsonian and behavioral effects of inactivation of the substantia nigra pars reticulata in hemiparkinsonian primates. *Exp Neurology*, 167: 410-424
- Wichmann T, Kliem MA, Soares J (2002) Slow oscillatory discharge in the primate basal ganglia. *J Neurophysiology*, 87:1145-1148
- Baron MS, Wichmann T, DeLong MR (2002) Effects of Transient Focal Inactivation of the Basal Ganglia in Parkinsonian Primates. *J Neuroscience*, 22: 592-599
- Galvan A, Smith Y, Wichmann T (2003) Validation of a flow enzyme fluorescence assay to measure glutamate using microdialysis in the awake primate. *J. Neuroscience Methods*, 126: 175-185
- Wichmann T, Kliem MA (2004) Neuronal activity in the primate substantia nigra pars reticulata during the performance of simple and memory-guided elbow movements. *J. Neurophysiology* 91: 815-827
- Kliem MA, Wichmann T (2004) A Method to Record Changes in Local Neuronal Discharge in Response to Infusion of Small Drug Quantities in Awake Monkeys. *J Neuroscience Methods*, in press
- Soares J, Kliem MA, Betarbet R, Greenamyre JT, Yamamoto B, Wichmann T (2004) Role of external pallidal segment in primate parkinsonism: comparison of the effects of 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine-induced parkinsonism and lesions of the external pallidal segment. *Journal of Neuroscience*. 24: 6417-26

Reviews and Book Chapters

Wichmann T, Baron MS, DeLong MR (1992) Local inactivation of the sensorimotor territories of the internal segment of the globus pallidus and the subthalamic nucleus alleviates parkinsonian motor signs in MPTP treated monkeys. In *The basal ganglia IV* (G Percheron, JS McKenzie, J Féger, eds), Adv Behav Biol 41: 357-364.

Bergman H, Wichmann T, Karmon B, DeLong MR (1992) Parkinsonian tremor is associated with low frequency neuronal oscillations in selective loops of the basal ganglia. In *The basal ganglia IV* (G Percheron, JS McKenzie, J Féger, eds), Adv Behav Biol 41: 317-326.

Smith Y, Wichmann T, DeLong MR (1992) The external pallidum and the subthalamic nucleus send convergent synaptic inputs onto single neurones in the internal pallidal segment in monkey: anatomical organization and functional significance. In *The basal ganglia IV* (G Percheron, JS McKenzie, J Féger, eds), Adv Behav Biol 41: 51- 63.

Wichmann T, DeLong MR (1993) Pathophysiology of parkinsonian motor abnormalities. Adv Neurol 60: 53-61.

DeLong MR, Wichmann T (1993) Basal ganglia-thalamocortical circuits in parkinsonian signs. Clin Neurosci 1:18-26.

Wichmann T, DeLong MR (1993) Basal ganglia, models of function: normal and disease. In *Neuroscience Year: supplement 3 to the Encyclopedia of Neuroscience* (B Smith, G Adelman, eds), Birkhäuser, Boston, pp. 14-16.

Bergman H, Wichmann T, DeLong MR (1993) Parkinsonism, effects of lesions of the subthalamic nucleus. In *Neuroscience Year: supplement 3 to the Encyclopedia of Neuroscience* (B Smith, G Adelman, eds), Birkhäuser, Boston, pp. 122-125.

Vitek JL, Wichmann T, DeLong MR (1995) Current concepts of basal ganglia neurophysiology relative to tremorgenesis. In *Handbook of tremor disorders* (LJ Findley, WC Koller, eds), Marcel Dekker, New York, pp. 37-51.

Wichmann T, Vitek J, DeLong MR (1995) Functional anatomy of Parkinson's disease - lessons from the laboratory and from neurosurgery. Neuroscientist 1:79-85.

Wichmann T, DeLong MR (1996) Basal Ganglia, Models of Function: Normal and Disease. In *Encyclopedia of Neuroscience* (B Smith, G Adelman, eds), Elsevier, New York.

Wichmann T, DeLong MR (1996) Functional and pathophysiological models of the basal ganglia. Current Opinion in Neurobiology. 6:751-758.

Wichmann T, DeLong MR (1996) Physiology of the basal ganglia and pathophysiology of movement disorders. In *Movement Disorders* (R Watts, C Kohler, eds), McGraw-Hill, New York, pp. 87-98.

Wichmann T. Hemiballism (Editorial). The Neurologist, in press, 1998.

Wichmann T, DeLong MR. (1998) Models of basal ganglia function and pathophysiology of movement disorders. Neurosurgery Clinics of North America 9: 223-234.

Wichmann, T., DeLong MR (1998) Pathophysiology of movement disorders and basal ganglia. In *Neurosurgical Treatment of Movement Disorders* (IM Germano, ed.), AANS, Park Ridge, Illinois, pp. 47-62.

Wichmann, T., Juncos JL (1999) Surgical approaches to Parkinson's disease. In *Parkinson's Disease - The treatment Options* (P LeWitt and W Oertel, eds), Martin Dunitz, London, pp. 197-214.

Wichmann T, DeLong MR (1999) Basal ganglia, models of function: normal and disease. In *Encyclopedia of Neuroscience*, 2nd edition (G Adelman, and B Smith, eds), Elsevier, New York, N.Y., pp. 209-212.

Wichmann T, DeLong MR (1999) News & Views: Oscillations in the basal ganglia. *Nature* 400: 621-622.

Wichmann T, DeLong MR, Vitek JL (2000) Pathophysiologic considerations in basal ganglia surgery: role of the basal ganglia in hypokinetic and hyperkinetic movement disorders. *Progr. Neurol. Surg.* Karger, Basel, vol. 15: 6990-6994

Wichmann T, DeLong MR (2001) Neurocircuitry of Parkinson's disease. In 5th Generation of Progress, American College of Neuropsychopharmacology, *in press*

Wichmann T, Smith Y, Vitek JL (2001) Basal Ganglia Anatomy and Physiology. In *Parkinson's Disease: A Guide for the New Millenium* (S Factor and W Weiner, eds). Demos Medical Publishing, *in press*.

Wichmann T, DeLong MR (2002) Functional Anatomy of the Basal Ganglia in Parkinson's Disease. In: *Parkinson's Disease B Advances in Neurology* vol. 92 (Gordin A, Teravainin H, Kaakola S, eds). Philadelphia: Lippinkott Williams & Wilkins, *in press*

Wichmann T, Vitek JL (2002) Physiology of the basal ganglia and pathophysiology of movement disorders. In: *Surgical Treatment of Parkinson's Disease and other Movement Disorders* (Tarsy D, Vitek JL, Lozano AM, eds), *in press*

Wichmann T, DeLong MR (2003) Pathophysiology of Parkinson's Disease: The MPTP Primate Model of the Human Disorder. *Ann New York Acad Sci* 991: 199-213

Wichmann T (2004) Subthalamic nucleus: anatomy and neurophysiology. In: *Deep Brain Stimulation and Epilepsy* (Lüders, HO, ed), Martin Dunitz, New York, pp. 29-44.

Wichmann T, DeLong MR (2004) Rationale for surgical Interventions in movement disorders. In: *Youman's Neurological Surgery*, 5th Edition (Winn HR, ed), Saunders, Philadelphia, pp. 2671-2681.